

Application Serial No. 09/944,572

REMARKS

1. Applicant thanks the Examiner for her remarks and observations which have greatly assisted Applicant in responding.

2. **35 U.S.C. § 112**

Claims 1-17, 23 and 34-45 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention.

As to the finding regarding the phrase "network comprising a memory, an apparatus . . . comprising a module . . .," Applicant respectfully disagrees that the expression is confusing. Specifically, the Examiner's concern is that it is not clear where the module is located. Claim 1, however, describes the functional relationship between the memory and the module: "said module comprising at least one programmable feedback shift register . . . wherein a final state of said at least one shift register is used as an index into said memory" It is clear from the preamble of the claim—"In a network for high-speed transmission of digital data..."—that the memory and the module are part of the same network. Because the functional relationship of the two elements is clearly described, it is unnecessary to further describe the physical relationship of the two elements. Accordingly, the present finding is deemed to be improper.

At line 7 of claim 1, the expression "said at least one shift register" is found to lack antecedent basis. Applicant has amended claim 1 to describe "said at least one programmable shift register." Accordingly, the rejection in this aspect is deemed to be overcome.

Regarding claim 5: The expression "said predictive nature of said randomization" is found to lack antecedent basis. Claim 5 is amended to describe "said element for predictive randomization," which tracks the language of claim 1 exactly. Therefore, the rejection as to claim 5 is deemed to be overcome.

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Regarding claim 10: The expression "said randomization" is found to lack antecedent basis. Applicant amends claim 10 to describe "said element for adaptive randomization," which tracks the language of claim 1 exactly. Thus, the rejection as to claim 10 is considered overcome.

Regarding claim 11: The expressions "said high speed predictive nature" and "said system permits" are found to lack antecedent basis. Applicant amends claim 11 to describe "element for predictive randomization comprises a high-speed element for predictive randomization," which tracks the language of claim 1 exactly. Therefore, the rejection as to claim 11 is deemed to be overcome.

Claims 23 and 34 are found to be indefinite because the use of the term "optionally" makes it unclear whether the elements are part of the claimed invention. Claim 23 has been amended to eliminate the optional element. Claim 34 has been cancelled from the application. Accordingly, the rejection as to claims 23 and 34 is deemed to be overcome.

3. Claim 54 is objected to because it is numbered twice. The second instance of claim 54 has been cancelled from the Application. The cancelled subject matter has been added to the Application as new claim 90. Applicant certifies that no new matter has been added by way of the new claim.

4. Claims 46-89 are objected to under 36 CFR § 1.75 as being substantial duplicates of claims 1-45. The invention provides a number of embodiments. One of these embodiments describes a high speed data classification system for parallel data. Claims 46-89 have been amended to describe the parallel data embodiment of the invention, with claims 47-48 and 69-74 cancelled from the application. Applicant certifies that no new matter has been added by way of the amendments. Support for the amendments to claims 46-89 is found at figures 2A and 19 of the application and in the accompanying description.

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5. 35 U.S.C. § 102

Claims 18-22 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Li, *et al.* ("Li"). Applicant respectfully disagrees.

Applicant first notes that the current rejection is improper because the Examiner has failed to clearly point to how and where the reference is alleged to describe the features of the claimed invention in sufficient detail and in such an order as to constitute anticipation. The goal of examination is to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity. MPEP § 706. Here, the Examiner's statement that Li discloses unmatched LFSR pattern generators in pseudorandom testing does not establish that Li describes "a randomizer for providing a usable feedback randomization pattern for a random set of inputs, based upon an effective mapping of input data patterns to output vectors." Accordingly, Applicant is unable to reply completely.

While Applicant is unable to reply completely to the current rejection, in the interest of advancing prosecution of the Application, Applicant attempts to answer the points raised by the Examiner. Applicant's response is not a waiver of the requirement that the Examiner clearly articulate the rejection.

Applicant next notes that the Li system and the current invention solve completely different problems. The Li system is worried about "transmitting" random patterns to a circuit under test. Li is working on a general purpose transmit problem, where the goal is to achieve "acceptable test quality" through sufficient randomization. Thus, as shown in Figures 3 and 4, Li attempts to solve this problem by generating a large number of fairly random output patterns from a small number of data bits to reduce the hardware overhead in producing sufficiently random test patterns to input to a circuit under test. Therefore, Li is attempting to solve a general purpose transmit problem, where the goal is to achieve acceptable test quality by randomizing the data as much as possible. Li's dynamic connection scheme is meant to account for the fact that the same output of the LFSR (linear feedback shift register) would be tied to multiple inputs

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of the Circuit under test. This would not permit sufficient randomization of the test patterns, resulting in the same data being mapped to multiple inputs of the Circuit under test, significantly degrading test quality.

In stark contrast, claim 18 describes:

"a randomizer for providing a usable feedback randomization pattern, for a random set of inputs, based upon an effective mapping of input data patterns to output vectors; and

means for handling a limited number of cases where two or more input data patterns are mapped to a same output value."

Thus, the present invention addresses a much more difficult problem--how to map large data input patterns into smaller values to permit rapid memory access of a reasonably sized memory. Thus, the present invention differentiates between the received input data by mapping received input data patterns to output vectors. To distinguish the claimed invention from Li more thoroughly, Applicant amends claim 18 to describe the inputs as received inputs to make it clear that the claimed invention differentiates the received data by mapping it to output vectors. Support for the amendment is found in Claim 23: "providing a data framer for framing input data." Accordingly, no new matter is added by way of the amendment. In view of the foregoing, the current rejection is deemed to be overcome. In view of their dependency from an allowable base claim, claims 19-22 are deemed to be allowable without any separate consideration of their merits. Nevertheless, Applicant provides the following remarks regarding claims 19-22.

Claim 19: As above, Li is concerned with transmitting random patterns to a circuit under test. Li's second LFSR provides additional data whitening. Claim 19 is amended as in claim 18 to emphasize that the current invention is concerned with receiving random data patterns and being able to differentiate between a large sample of transformed values.

Claim 20: Claim 20 has been amended to harmonize with claims 18 and 19. Additionally, the Examiner points to no teaching from Li that describes

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"wherein sufficient randomizer feedbacks are simultaneously evaluated to provide that a usable feedback is substantially always available. "

Claim 21: Claim 21 is amended to harmonize with claims 18-20. Additionally, even if claim 21 had not been amended, there is no teaching or suggestion in Li of "secondary randomizer for differentiating between input data patterns that have been mapped to a same output value." As Applicant has previously explained, Li is not concerned with differentiating between feedback patterns. Rather, Li's secondary LFSR provides additional data whitening.

Claim 22: Claim 22 has been amended to harmonize with claim 18. Additionally, the Examiner has pointed to no teaching from Li that describes "for a given number of output states, a given number of input data patterns, and a given number of multiple outputs, said means for handling determines a probability that any specific randomizer feedback maps said input data patterns into a usable set of output states."

Claim 23 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,974,104 ("Dhara"). Applicant respectfully disagrees. The Examiner relies on Figure 1 of Dhara and col. 2, line 36 to col. 3, line 29 as teaching "performing serial mode classification of said data" There is no description whatsoever in the cited teaching from Dhara of serial mode classification. What is described in Dhara is conventional parallel mode classification. Accordingly, on this ground alone, the current rejection is deemed to be improper. Additionally, there is no description in the cited teaching of "performing adaptive programmable randomization to differentiate between input vectors. . . ." There is no description whatsoever in Dhara of any type of randomization process. More particularly, there is no description of "adaptive programmable randomization." The ordinarily skilled practitioner would understand the term "adaptive" to mean that an apparatus adjusts, over time, to changing conditions. That is, that it "learns." There is no description in Dhara to suggest that the data framer described performs in anything other than a completely mechanistic, stereotypical fashion. There is therefore, no teaching in Dhara of "performing adaptive programmable randomization to differentiate

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between input vectors. . . .” Therefore, the current rejection is deemed to be improper.

Claim 24 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,530,095 (“Ryan”). Applicant respectfully disagree. The Examiner is respectfully reminded that she must consider every word of a claim when assessing patentability. Thus, the current rejection is improper because the Examiner appears to have completely ignored the expression adaptive programmable randomizer. Claim 24 describes:

“said data framer comprising an adaptive programmable randomizer; and a complex circuit for controlling said adaptive programmable randomizer.”

There is no teaching or suggestion in Ryan of an adaptive programmable randomizer. There is no randomization of data whatsoever: “Shift register 16 accordingly produces a parallel output indicative of its content to comparator 17. Of course, the content corresponds to a sequence of the predetermined number of successive bits in the input bit stream.” Col. 2, lines 25-29, emphasis added. Ryan describes a simple template register that performs a very simple brute-force comparison of the actual data to a short data pattern. Thus, Ryan’s system is neither programmable or adaptive. Therefore, the current rejection is deemed to be improper. In view of their dependency from an allowable base claim, the dependents are deemed to be allowable without any separate consideration of their merits.

Claims 24 and 31-36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,907,614. Applicant respectfully disagrees as to claim 24. Bergstrom shows nothing of an “adaptive programmable randomizer.” As Bergstrom describes, “In a T-1 system, every 193rd bit is a framing bit. The framer circuitry in the preferred ASIC scans the incoming data in order to find the predetermined framing pattern.” Thus, Bergstrom does not provide a randomizer. More particularly, Bergstrom does not provide an adaptive, programmable randomizer. Unlike Bergstrom, the present invention analyzes totally random data patterns. Accordingly, the current rejection is deemed to be improper. In view of their dependency from an allowable base claim, the

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dependents are deemed to be allowable without any separate consideration of their merits. Nevertheless, Applicant has the following comments regarding claim 31:

In view of the foregoing, claim 31 is deemed to be allowable. Even if claim 24 were not allowable, the current finding would be improper because it is patently incorrect. Bergstrom describes an ASIC that detects fixed patterns in the input data stream, and forces the Network Interface Unit into various modes of operation when these fixed patterns are received. Bergstrom does not "maintain multiple input pattern mappings associated with different primary and secondary randomizer equations" because it does not use any form of randomizer, but uses a brute force comparison. Bergstrom does not determine the best randomizer selection, when to switch, or when a mapping is no longer useful. Bergstrom operates at a legacy level of framing data and comparing bits in the input stream. Applicant thoroughly discussed same in the discussion of prior art in the current Application.

Regarding claim 34: Claim 34 describes a complex ability to perform successive masking and checking of input patterns. The Examiner has pointed to no teaching from Bergstrom that describes such subject matter. Accordingly, the rejection of claim 34 is deemed to be improper.

Regarding claim 33: Claim 33 has been amended to incorporate the allowable subject matter of claim 34. Accordingly, claim 33 is deemed to be allowable. In view of their dependency from an allowable base claim, the dependents are deemed to be allowable without any separate consideration of their merits.

Claim 33 stands rejected under 35 U.S.C. 102(e) as being anticipated U.S. published application no. 2001/0055274 ("Hegge"). In view of the foregoing amendment to claim 33, the current rejection is deemed to be overcome.

6. 35 U.S.C. § 103

Claims 1, 5-11 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,546,503 ("Abe") in view of Li. Applicant

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respectfully disagrees. In order to establish a prima facie case of obviousness the Examiner must show (1) that the combination teaches or suggests all elements of the claimed invention; (2) a motivation to combine the selected references to derive the claimed invention, and (3) a reasonable expectation of success from the combination. The current rejection is improper because the Examiner has failed to demonstrate at least that (1) the combination teaches or suggests all elements of the claimed invention, and (2) a reasonable expectation of success from the invention. Abe describes an apparatus for pattern matching based on neural networks. However, Abe fails to teach "functional elements for adaptive, programmable, predictive, and sequential randomization of said data" and "at least one programmable feedback shift register that is driven by said input data, wherein a final state of said at least one shift register is used as an index into said memory to determine which if any input data pattern has been matched;
wherein input data pattern matching effects data classification."

The Examiner relies on Li to supply the missing elements. As Applicant explained above in relation to claim 18, Li is concerned with "transmitting" random patterns to a circuit under test. Li is working on a general purpose transmit problem, where the goal is to achieve "acceptable test quality" through sufficient randomization. Thus, as shown in Figures 3 and 4, Li attempts to solve this problem by generating a large number of fairly random input patterns from a small number of data bits to reduce the hardware overhead in producing sufficiently random test patterns to input to a circuit under test. Therefore, Li is attempting to solve a general purpose transmit problem. The present invention addresses a much more difficult problem—how to map large data input patterns into smaller values to permit rapid memory access of a reasonably sized memory. Thus, the present invention differentiates between the received input data by mapping received input data patterns to memory locations. Accordingly, there is no teaching or suggestion in the combined teachings of Abe and Li of "rapid differentiation of input data" or "wherein a final state of said at least one shift register is used as an index into said memory to determine which if any input

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data pattern has been matched" or "wherein input data pattern matching effects data classification."

Additionally, as above, the problem addressed by the invention is the much more difficult than that addressed by Li. Because Li and the claimed invention solve completely different problems, there would be no reasonable expectation of success from combining the teachings of Li with the teaching of Abe to solve the problem solved by the claimed invention. Therefore, the current rejection under 35 U.S.C. § 103(a) is deemed to be improper. In view of their dependency from an allowable base claim, the dependents are deemed to be allowable without any separate consideration of their merits.

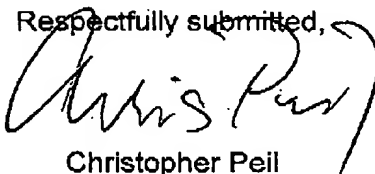
The above remarks apply equally to claim 23. Additionally, there is no teaching or suggestion in the combined teachings of 'performing serial mode classification of said data to produce extremely fast characterization in a predictable timeframe by performing adaptive programmable randomization to differentiate between input vectors.' Accordingly, the rejection of claim 23 under 35 U.S.C. 103(a) is deemed to be improper.

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CONCLUSION

In view of the foregoing, the Application is deemed to be in allowable condition. Therefore, reconsideration and prompt allowance of the claims is requested, allowing the application to pass to issue as a United States Patent. Should the Examiner have any questions regarding the Application, she is urged to contact Applicant's attorney at 650-474-8400.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Chris Peil", written over the typed name.

Christopher Peil

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